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operate in the 20-mc band and it has the same type of modulation used by standard radio stations and amateur radio operators. Also, it has more power output and is more efficient than the transistorized transmitters used in present U. S. satellites. Developed by Philco's Research division for the Army Ordnance Missile Command, the satellite transmitter weighs less than 10 ounces, is 5 in. in diameter and 1 in. high.

New Philco high frequency power transistors made it possible to build this telemetering transmitter which provides up to one watt of output power. This is in contrast to one-to-two hundredths of a watt of output from transistorized transmitters in present U. S. satellites.

These power transistors, developed especially for the 20-mc transmitter by Philco's Lansdale Tube division, are used instead of bulky vacuum tubes which require large batteries of short life span.

Another transistor advantage is that nearly one half of the power taken from a satellite's batteries, which operate the transmitter, is radiated as radio frequency energy. This is an important advancement since electrical power is limited and precious in an orbiting space satellite.

The Philco satellite transmitter is capable of operating at high efficiency in outer space within a temperature range of 5 to 187 F.

Industrial Stereo-Microscope with Low Power Attachment.—Increasingly important in quality control, production line inspection, research work and small parts assembly is a new industrial stereo-microscope with low power attachment now being manufactured by Edmund Scientific Company.

Because it provides three-dimensional vision, the Edmund Stereo-Microscope permits the detection of flaws in materials, reveals depth of depressions in surfaces and makes it far easier to interpret images under magnification. Erect image allows production workers to use only normal movements while working on magnified operations. Low power and wider fields of view with depth permit industrial applications impossible with conventional microscopes. Current uses include: checking of air seals on cans, analysis of oil well cores, examination of textile samples, inspection of work turned out by machine tools, close work on engravings and printed matter.

The Edmund Stereo-Microscope is unusually rugged for hard, industrial use. Base is cast iron and body aluminum, finely machined on bearing surfaces. Features include: two sets of objectives on rotating turret for a variety of powers, standard range of interpupilary adjustment, helical rack and pinion focusing—3-in. smooth travel, clear bright image, wide field optics, achromatic objectives and eye lenses, long working distance of 2 and 3 in. long overhand for examining bulky objects. Additional eye-pieces and low power adjustment (special lens mounted on rod which fastens to arm of microscope) give a power of 6, 10, 23 and 40. The instrument is fully tested, adjusted and guaranteed.

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drogen, nitrogen, and oxygen. The hydrogen in the atmosphere reduces the copper oxides to metallic copper, while the oxygen prevents reduction of other oxides in the system and promotes good wetting of the glass frit and the ceramic. Without the oxygen present, a poor bond results.

Printed wiring cards prepared this way can be dip-soldered without bond failure, and without the use of corrosive fluxes. In tests of bond strengths, 20-gauge headed wires were attached to the pattern with an area contact about 0.01 sq. in. Bond failure did not occur until about 2000-psi. tensile pull, and even then generally involved breaking out the ceramic rather than bond failure.

There are other potential uses for the new copper paste in addition to printed circuits. With suitable modification of the vehicle, the copper can be applied with a brush or spray gun. When fired, these coatings form a good base for making metal to ceramic bonds, using lead-tin solders.

Conversion of Salt Water.—The General Electric Company has announced the development of a new process for the conversion of salt or brackish water to pure water. The process is based on the "thin film" concept in heat transfer in which the over-all resistance to heat flow is decreased through the combined use of thin films of water both for evaporation and condensation.

Using an experimental, concentric, vertical tube distillation unit, thin films of water for evaporation are achieved by spreading the fluid on the inner surface of the tube by means of a slowly rotating wiper. In condensing the vapor on the outer surface of the tube, thin films result from the utilizaiton of surface tension. Over-all heat transfer coefficients as high as 8000 Btu./(hr.) (sq. ft.) (deg. F.) have been obtained under laboratory conditions with the experimental apparatus.

Current laboratory activities are involved with the construction of prototype test models to prove the feasibility of applying the "thin film" process to various sizes of demineralization equipment. Based on experimental results, applications of the new process point to potential dollar savings through the reduction in cost of energy consumption, initial cost of equipment, and cost of maintenance.

Computer System Reviews Half-Million Insurance Policy Records in Two Hours.—With the aid of an RCA 501 business data system, the State Farm Life Insurance Company of Bloomington, Ill., soon will be able to review a half million policy records within a 2-hr. period each day.

The RCA 501 stores complete information on a life insurance policy on less than 1 in. of magnetic tape instead of the 14 business machine cards now being used by the company.

The first all-transistor electronic data processing system designed to take over the paperwork loads of business, industry and government, the RCA 501 is being used by insurance companies, manufacturing concerns, public utilities, stock brokerage houses, banks and branches of the Army, Navy and Air Force to simplify and speed up clerical work.

In this high-speed insurance operation, the RCA 501 system will add new records, make changes where called for and post payments. It will also determine whether a premium notice or any other documentary followup is required; if it is, such notices will be turned out by the high-speed printer four times faster than the system previously used.

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